

What is claimed is:

CLAIMS

1. An apparatus, comprising:
  - 5 an intermediate device comprising protocol sensing circuitry being capable of determining, at least in part, at least one communication protocol, among a plurality of communication protocols, via which at least one storage device connected to the intermediate device is capable of communicating, the intermediate device also comprising flow control circuitry being capable of controlling a data stream that may be
  - 10 communicated from said storage device using at least one of a plurality of communication protocols.
2. The apparatus of claim 1, wherein:

the intermediate device is further capable of detecting a predetermined initialization signal sequence indicative of a communication protocol.
- 15 3. The apparatus of claim 2, wherein:

the predetermined signal sequence comprises an out-of-band signal sequence.
4. The apparatus of claim 1, wherein:

the protocol detection circuitry is also capable of receiving at least one of an out-of-band signal sequence and an analog burst signal sequence, and the flow control

- 20 circuitry comprises data tracking circuitry capable of receiving a data stream from said at least one storage device and also capable of generating a clock signal indicative of the frequency of said data stream, said flow control circuitry also comprising retimer circuitry capable of receiving said data stream and said clock signal and generating a retimed data stream.

5. The apparatus of claim 1, wherein:

the intermediate device is capable of being coupled, via at least one cable, to said storage device.

6. The apparatus of claim 1, wherein:

5 the plurality of different communication protocols comprise a Fibre Channel protocol, a Serial Attached Small Computer System Interface protocol, and a Serial Advanced Technology Attachment protocol.

7. The apparatus of claim 1, wherein:

10 the intermediate device is capable of being coupled to a cable compatible with at least one of said communication protocols.

8. The apparatus of claim 1, wherein:

the intermediate device further comprises protocol control circuitry capable of receiving a signal from said storage device and, in response at least in part thereto, generating an acknowledge signal to be transmitted to said storage device.

15 9. A system, comprising:

a circuit card comprising an integrated circuit capable of communicating in accordance with a plurality of different communication protocols, the circuit card being capable of being coupled to a bus, and an intermediate device coupled to said circuit card, said intermediate device being capable of determining, at least in part, at least one  
20 communication protocol, among a plurality of communication protocols, via which at least one storage device connected to the intermediate device is capable of communicating, the intermediate device also being capable controlling a data stream generated by at least one of said integrated circuit and said storage device.

10. The system of claim 9, wherein:

the intermediate device is coupled to said circuit card and said storage device via one or more cables.

11. The system of claim 9, wherein:

5 the intermediate device is further capable of detecting a predetermined initialization signal sequence indicative of at least one of said plurality of communication protocols.

12. The system of claim 11, wherein:

the predetermined signal sequence comprises an out-of-band signal sequence.

10 13. The system of claim 9, wherein:

the intermediate device is further capable of controlling said data stream to produce a retimed data stream, and transmitting the retimed data stream to at least one of the circuit card and the storage device.

14. The system of claim 9, wherein:

15 the plurality of different communication protocols comprise a Fibre Channel protocol, a Serial Attached Small Computer System Interface protocol, and a Serial Advanced Technology Attachment protocol.

15. A method, comprising:

determining, at least in part, by an intermediate device at least one communication  
20 protocol via which at least one storage device connected to the intermediate device is capable of communicating; and

controlling, at least in part, by the intermediate device, at least one data stream from said at least one storage device in accordance with at least one communication protocol.

16. The method of claim 15, further comprising:

5        retiming, by the intermediate device, said at least one data stream generated by said at least one storage device.

17. The method of claim 15, further comprising:

          receiving, by the intermediate device, an initialization signal sequence; and  
          selecting, by the intermediate device, at least one communication protocol based  
10        on said initialization signal sequence.

18. The method of claim 15, further comprising:

          determining, by the intermediate device, a link frequency associated with said  
storage device; and  
          communicating, by said intermediate device with said storage device using said  
15        link frequency.

19. The method of claim 15, further comprising:

          communicating, by the intermediate device with said at least one storage device  
with a selected communication protocol among a plurality of communication protocols.

20. An article comprising:

20        a storage medium having stored thereon instructions that when executed by a machine result in the following operations:

determining, at least in part, by an intermediate device at least one communication protocol via which at least one storage device connected to the intermediate device is capable of communicating; and

controlling, at least in part, by the intermediate device, at least one data stream  
5 from said at least one storage device in accordance with at least one communication protocol.

21. The article of claim 20, further comprising the following operations:

retiming, by the intermediate device, said at least one data stream generated by said at least one storage device.

10 22. The article of claim 20, further comprising the following operations:

receiving, by the intermediate device, an initialization signal sequence; and  
selecting, by the intermediate device, at least one communication protocol based on said initialization signal sequence.

23. The article of claim 20, further comprising the following operations:

15 determining, by the intermediate device, a link frequency associated with said storage device; and  
communicating, by said intermediate device with said storage device using said link frequency.

24. The article of claim 20, further comprising the following operations:

20 communicating, by the intermediate device with said at least one storage device with a selected communication protocol among a plurality of communication protocols.